

Mains Failure Alarm

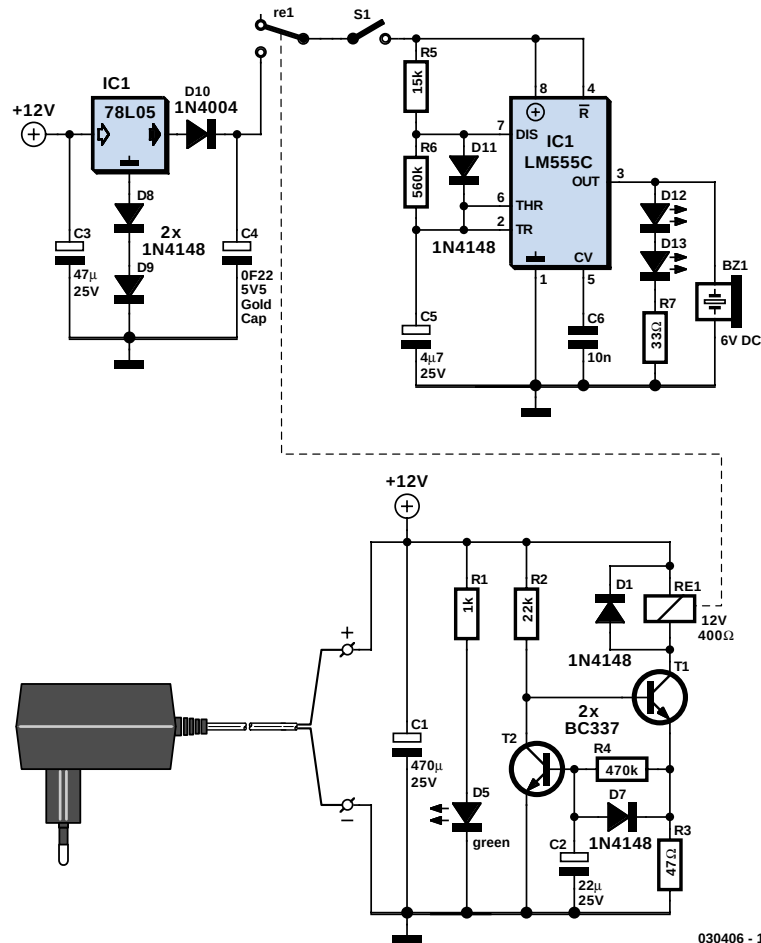
Myo Min

This circuit was designed to produce an audible alarm when the mains power is interrupted. Such an alarm is essential for anyone whose livelihood depends on keeping perishable foodstuffs in cold storage.

The circuit is powered by a 12-V mains adapter. LED D5 will light when the mains voltage is present. When the mains voltage disappears, so does the +12 V supply voltage, leaving the voltage regulator IC1 and relay driver T1-T2 without power. The relay driver, by the way, is an energy-saving type, reducing the coil current to about 50% after a few seconds. Its operation and circuit dimensioning are discussed in the article 'Relay Coil Energy Saver'.

The value of the capacitor at the output of voltage regulator IC1 clearly points to a different use than the usual noise suppression. When the mains power disappears, Re1 is de-energised and the 0.22 F Goldcap used in position C4 provides supply current to IC2. When the mains voltage is present, C4 is charged up to about 5.5 volts with IC1 acting as a 100-mA current limit and D10 preventing current flowing back into the regulator output when the mains voltage is gone. According to the Goldcap manufacturer, current limiting is not necessary during charging but it is included here for the security's sake.

The CMOS 555 is configured in astable multivibrator mode here to save power, and so enable the audible alarm to sound



as long as possible. Resistors R5 and R6 define a short 'on' time of just 10 ms. That is, however, sufficient to get a loud warning from the active buzzer. In case the pulses are too short, increase the value of

R5 (at the expense of a higher average current drawn from the Goldcap).

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